IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicants:	Ludmilla Cherkasova et al.	§	Art Unit:	2155
		§		
Serial No.:	10/801,793	§		
		§	Examiner:	Michael Young Won
Filed:	March 16, 2004	§		
		§		
Title:	System And Method For Determining A Streaming Media Server Configuration For Supporting Expected Workload In Compliance With At Least One Service Parameter	§	Docket No.	200401021-1 (HPC.0519US)

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Commissioner for Patents
P.O. Box 1450
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REPLY BRIEF

Dear Sir:

Applicant's Reply to the Examiner's Answer is set forth below.

Date of Deposit: May 11, 2009

I hereby certify that this correspondence is being transmitted electronically to the U.S. Patent Office on the date indicated above.

Janice Munoz

A. **Whether Claims 1, 3-26, 28-32, 34-40 and 42-46 Are Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?**

1. **Whether Claim 1 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?**

The method of independent claim 1 includes determining, via a capacity planning system, how many servers are to be included at a site for supporting an expected workload in compliance with a service parameter that defines a desired service characteristic to be provided by a media server configuration during periods of degraded service under an expected workload.

The Examiner appears to concede that the hypothetical combination of Eilam and Huckins fails to disclose a service parameter that defines a desired service characteristic to be provided by a media server configuration during periods of degraded service under an expected workload. Examiner's Answer, p. 5. The Examiner, however, assigns no patentable weight to the act of determining how many servers are to be include at a site for supporting an expected workload in compliance with such a service parameter based on the following reasoning:

> However, these differences are only found in the nonfunctional descriptive material and are not functionally involved in the steps recited. The receiving, into said capacity planning system, at least one service parameter that defines a desired service characteristic to be provided by a server configuration under the expected workload will be performed regardless of the conditional period of operation. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994).

Examiner's Answer, pp. 5 and 6. In essence, the Examiner is relying on printed matter cases to ignore the purportedly nonfunctional descriptive language of claim 1. However, the Examiner's reliance on these cases is misplaced, as explained in *In re Lowry*. In this regard, in *In re Lowry*, the Federal Circuit reversed the Examiner's rejections because no patentable weight was assigned to limitations that were contended by the Examiner to be analogous to printed matter. More specifically, the Federal Circuit held the following:

> The printed matter cases "dealt with claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the

> human min." *In re Bernhart*, 417 F.2d 1395, 1399, 163 USPQ 611, 615 (CCPA 1969). The printed matter cases have no factual relevance where "the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer." *Id.* (emphasis in original). Lowry's data structures, which according to Lowry greatly facilitate data management by data processing systems, are processed by a machine. Indeed, they are not accessibly other than through sophisticated software systems. The printed matter cases have no factual relevance here.

In re Lowry, 32 USPQ2d, 1031, 1034 (Fed. Cir. 1994).

As in *In re Lowry,* the method of claim 1 is directed to information that is processed by a machine, i.e., a capacity planning system, and as such, limitations of claim 1 may not be ignored based on the assertion that the limitations are printed matter or analogous to printed matter. Thus, all claim limitations must be considered. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (holding "all words in a claim must be considered in judging the patentability of that claim against the prior art"); M.P.E.P. §2143.03.

It is noted that even assuming, for purposes of argument, that the contested descriptive language of claim 1 has to be functional in order to be assigned patentable weight, the language satisfies this requirement. More specifically, the method of claim 1 does not merely recite determining how many servers are to be included at a site in compliance with an arbitrary parameter; but rather, claim 1 recites determining how many servers are to be included in compliance with a service parameter that defines a desired service characteristic to be provided by a media server configuration during periods of degraded service under an expected workload. Thus, the specific service parameter that is set forth in claim 1 restricts the determination of the number of servers, as this determination must comply with the defined service parameter.

When all of the limitations of claim 1 are assigned the patentable weight that they are due, it becomes clear that the hypothetical combination of Eilam and Huckins fails to disclose or render obvious the method of claim 1. Therefore, Applicant maintains that the § 103 rejection of independent claim 1 is in error and should be reversed.

2. **Whether Claim 3 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?**

For similar reasons, Applicant maintains that the § 103 rejection of claim 3 overcomes the § 103 rejection. In this regard, claim 3 is patentable for at least the additional, independent reason that claim 3 further defines the service parameter. Not only do these additional limitations impart functional limitations on claim 1, as claim 3 further defines the service parameter and as a result, further defines at least the act of determining the number of servers, the additional limitations that are presented in claim 3 cannot be essentially ignored based on the Examiner's functional/nonfunctional labeling. As described above, the Examiner's reliance on the printed matter cases is misplaced, as the alleged "printed matter" is processed by a machine, a capacity planning system, and as such, the cases that are cited by the Examiner have no bearing on the construction of claim 3.

Therefore, Applicant maintains that the § 103 rejection of claim 3 is in error and should be reversed.

3. **Whether Claim 11 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?**

The method of claim 11 recites that the capacity planning tool determines how many servers are to be included at the site for supporting an expected workload in compliance with a performability parameter that defines a desired service characteristic to be provided by a media server configuration during non-compliant periods of operation under an expected workload.

The Examiner takes the position that the language of claim 11, which defines the performability parameter may effectively be ignored as this language is purportedly nonfunctional and descriptive. As set forth above, however, the Examiner's reliance on printed matter cases is misplaced, as the performability parameter is processed by a capacity planning tool and thus, the printed matter cases have no relevance. Furthermore, the specifically-defined performability parameter places functional limitations into claim 11, in that the capacity planning tool determines how many servers are to be included at

the site in compliance with the specifically-defined performability parameter, not just a performability parameter in the abstract.

Therefore, for at least the foregoing reasons, Applicant maintains that the § 103 rejection of claim 11 is in error and should be reversed.

4. Whether Claim 22 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?

The method of claim 22 recites that the capacity planning tool receives at least one performability parameter that defines a desired limit on an amount of continuous overload that is encountered by a media server configuration under an expected workload.

The Examiner ignores the above-recited limitations of claim 22 on the basis that these limitations are purportedly nonfunctional and descriptive. Examiner's Answer, p. 10. It is noted that the Examiner apparently concedes that the hypothetical combination of Huckins and Eilam fails to disclose or render obvious the claimed performability parameter. However, there is no basis for ignoring claim language when the claim language is processed by a machine, such as the recited capacity planning tool. Furthermore, the performability parameter defines a desired limit on an amount of continuous overload and thus, is functional, contrary to the Examiner's labeling.

Thus, for at least the foregoing reasons, Applicant maintains that the § 103 rejection of claim 22 is in error and should be reversed.

5. Whether Claim 30 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?

The method of claim 30 recites defined service parameters that include at least one performability parameter that defines a desired limit on an amount of continuous overload that is encountered by a media server configuration under an expected workload. The media server configuration under evaluation supports the expected workload in compliance with the defined service parameter.

The Examiner apparently concedes that the hypothetical combination of Eilam and Huckins fails to disclose the above-recited service parameters of claim 30. Office Action,

pp. 12 and 13. However, claim 30 recites that the media server configuration supports an expected workload in compliance with these specifically-defined service parameters, not just service parameters in the abstract. Thus, the Examiner is inappropriately relying on the limitations being considered printed matter, in view of the Federal Circuit holding in *In re Lowry* that printed matter cases have no relevance when information is processed by a machine, such as the claimed media server. Additionally, the purported nonfunctional descriptive language is indeed functional, given that the media server supports the expected workload in compliance with the specifically-defined service parameters.

Thus, for at least the foregoing reasons, Applicant maintains that the § 103 rejection of claim 30 is in error and should be reversed.

6. Whether Claim 36 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?

The system of claim 36 includes a means for receiving at least one performability parameter that defines a desired limit on an amount of continuous overload encountered by at least one media server configuration.

The Examiner concedes that the hypothetical combination of Eilam and Huckins fails to disclose the means for receiving of claim 36. Office Action, pp. 13-14. However, the specifically-defined performability parameter cannot be ignored, in that the performability parameter is functional language that defines the means for receiving.

Thus, for at least the foregoing reasons, Applicant maintains that the § 103 rejection of claim 36 is in error and should be reversed.

7. Whether Claim 44 Is Rendered Obvious under 35 U.S.C. § 103(a) as Being Unpatentable over U.S. Patent Application Publication No. 2004/0111509 (Eilam) in View of U.S. Patent No. 5,890,162 (Huckins)?

Claim 44 recites a capacity planner that is operable to determine how many servers of the server configuration are needed to provide a media server solution in compliance with defined performability parameters that specify a desired limit on degradation of quality of service provided by a media server solution during periods of degraded service.

In the § 103 rejection of claim 44, the Examiner concedes that the hypothetical combination of Eilam and Huckins fails to disclose or render obvious parameters that specify desired limit on degradation of quality of service during periods of degraded service. The Examiner contends that these limitations are purportedly nonfunctional descriptive language and fails to assign patentable weight to these limitations on this basis. However, contrary to this position, claim 44 recites that a capacity planner determines how many servers of a server configuration are needed to provide a media server solution in compliance with the parameters that specify a desired limit on degradation of quality of service provided by a media server solution. As such, the purportedly nonfunctional descriptive language is actually functional, in that it defines how the capacity planner determines how many servers are needed. Therefore, when the expressly-worded limitations of claim 44 are given the patentable weight that they are due, it becomes clear that claim 44 overcomes the § 103 rejection.

The Commissioner is authorized to charge any fees or credit any overpayment to Deposit Account No. 08-2025, under Order No. 200401021-1.

Respectfully submitted,

Date: May 11, 2009

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APPENDIX OF CLAIMS

The claims on appeal are:

1. A method comprising:

receiving, into a capacity planning system, workload information representing an expected workload of client accesses of streaming media files from a site;

receiving, into said capacity planning system, at least one service parameter that defines a desired service characteristic to be provided by a media server configuration under the expected workload and defines a desired service characteristic to be provided by a media server configuration during periods of degraded service under the expected workload; and

determining, by said capacity planning system, for at least one server configuration, how many servers of said at least one server configuration to be included at said site for supporting the expected workload in compliance with said at least one service parameter.

3. The method of claim 1 wherein said at least one service parameter specifies a limit on the amount of degradation of service encountered during said periods of degraded service.

4. The method of claim 1 wherein said at least one service parameter comprises at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of a media server configuration, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration have failed.

5. The method of claim 1 wherein said at least one service parameter comprises a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of a media server configuration, and a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration have failed.

6. The method of claim 1 wherein said at least one service parameter comprises at least one basic capacity parameter.

7. The method of claim 6 wherein said at least one basic capacity parameter comprises at least one selected from the group consisting of:

a statistical demand guarantee that specifies a desired limit on the percentage of time that a media server configuration is overloaded under the expected workload, and

a utilization constraint that specifies a desired limit on the percentage of time that a media server configuration is at or near its capacity under the expected workload.

8. The method of claim 6 wherein said at least one basic capacity parameter comprises a statistical demand guarantee that specifies a desired limit on the percentage of time that a media server configuration is overloaded under the expected workload, and a utilization constraint that specifies a desired limit on the percentage of time that a media server configuration is at or near its capacity under the expected workload.

9. The method of claim 6 wherein said at least one service parameter further comprises at least one performability parameter that defines a desired limit on the amount of degradation of service encountered during said percentage of time that a media server configuration is overloaded under the expected workload.

10. The method of claim 6 wherein said at least one service parameter further comprises at least one performability parameter that defines a desired limit on the amount of continuous overload encountered at any given time by a media server configuration under the expected workload.

11. A method comprising:

receiving, into a capacity planning tool, information about a first server configuration;

receiving, into said capacity planning tool, workload information representing an expected workload of client accesses of streaming media files from a site;

receiving, into said capacity planning system, at least one performability parameter that defines a desired service characteristic to be provided by a media server configuration during non-compliant periods of operation under the expected workload; and

said capacity planning tool determining how many servers of said first server configuration to be included at said site for supporting the expected workload in compliance with said at least one performability parameter.

12. The method of claim 11 wherein said non-compliant periods of operation comprise periods of degraded performance in servicing said expected workload.

13. The method of claim 12 wherein said degraded performance is performance in which said media server configuration is unable to satisfy real-time constraints of at least one stream being served.

14. The method of claim 12 wherein said degraded performance is performance in which said media server configuration is unable to serve at least one stream so as to avoid interruptions in the presentation of such stream.

15. The method of claim 12 wherein said degraded performance results from overload of said media server configuration.

16. The method of claim 11 wherein said non-compliant periods of operation comprise periods of at least one node failure of a clustered media server configuration.

17. The method of claim 11 further comprising:

receiving, into said capacity planning system, at least one basic capacity parameter that defines a desired service characteristic to be provided by a media server configuration during compliant periods of operation under the expected workload.

18. The method of claim 17 wherein said compliant periods of operation comprise periods in which said media server configuration is not overloaded under the expected workload.

19. The method of claim 17 further comprising:

said capacity planning tool performing basic capacity planning to determine how many servers of said first server configuration to be included at said site for supporting the expected workload in compliance with said at least one basic capacity parameter.

20. The method of claim 19 further comprising:

said capacity planning tool determining how many servers of said first server configuration to be included at said site for supporting the expected workload in compliance with said at least one basic capacity parameter and said at least one performability parameter.

21. The method of claim 11 wherein said at least one performability parameter comprises at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of said media server configuration, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration have failed.

22. A method comprising:

receiving, into a capacity planning tool, workload information representing an expected workload of client accesses of streaming media files over a period of time T;

said capacity planning tool determining, for at least one media server configuration under evaluation, an amount of overload encountered by said at least one media server configuration during each of a plurality of time intervals of said expected workload; and

said capacity planning tool receiving at least one performability parameter that defines a desired limit on the amount of continuous overload encountered by a media server configuration under the expected workload.

23. The method of claim 22 where each of said plurality of time intervals have a size I where I<T.

24. The method of claim 22 wherein beginning points of each of said plurality of time intervals are separated by a Step amount.

25. The method of claim 24 wherein said Step<I.

26. The method of claim 24 wherein each of said intervals has a duration of 1 hour and said Step is 1 minute.

28. The method of claim 22 wherein said capacity planning tool evaluates said amount of overload encountered by said at least one media server configuration during each of said plurality of time intervals to determine whether said at least one media server configuration satisfies said at least one performability parameter.

29. The method of claim 22 wherein said at least one performability parameter comprises at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of a media server configuration, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration have failed.

30. A method comprising:

receiving, into a capacity planning tool, workload information identifying an expected workload of client accesses of streaming media files from a server over a period of time T;

determining, by said capacity planning tool, an interval overload profile for a media server configuration under evaluation, wherein said interval overload profile specifies an amount of overload of said media server configuration for each of a plurality of time intervals of duration I of said expected workload, where I<T; and

said capacity planning tool determining based at least in part on the interval overload profile whether said media server configuration under evaluation supports the expected workload in compliance with defined service parameters that define service characteristics desired by a service provider, wherein said defined service parameters include at least one performability parameter that defines a desired limit on the amount of continuous overload encountered by a media server configuration under the expected workload.

31. The method of claim 30 wherein beginning points of each of said plurality of time intervals are separated by a Step amount.

32. The method of claim 31 wherein said Step<I.

34. The method of claim 30 wherein said capacity planning tool evaluates said interval overload profile for said media server configuration under evaluation to determine whether said media server configuration under evaluation satisfies said at least one performability parameter.

35. The method of claim 30 wherein said at least one performability parameter comprises at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of a media server configuration, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration have failed.

36. A system comprising:

means for receiving workload information representing an expected workload of client accesses of streaming media files from a site over a period of time T;

means for determining, for at least one media server configuration under evaluation, an amount of overload encountered by said at least one media server configuration during servicing each of a plurality of time intervals of said expected workload; and

a means for receiving at least one performability parameter that defines a desired limit on the amount of continuous overload encountered by at least one media server configuration.

37. The system of claim 36 further comprising:

means for receiving information specifying duration of each of said time intervals.

38. The system of claim 36 where each of said plurality of time intervals have a duration I where I<T.

39. The system of claim 36 wherein beginning points of each of said plurality of time intervals are separated by a Step amount.

40. The system of claim 39 wherein said Step is smaller in duration than a duration I of each of said intervals.

42. The system of claim 36 further comprising:

means for evaluating the determined amount of overload encountered by said at least one media server configuration under evaluation for each of said plurality of time intervals to determine whether said at least one media server configuration under evaluation satisfies said at least one performability parameter.

43. The system of claim 36 wherein said at least one performability parameter comprises at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of performance degradation under regular system operation of said at least one media server configuration under evaluation, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server configuration under evaluation have failed.

44. A system comprising:

a media profiler operable to receive workload information for a service provider's site and generate a workload profile for a server configuration under consideration for supporting the service provider's site; and

a capacity planner operable to receive the generated workload profile for the server configuration under consideration and determine how many servers of said server configuration are needed to provide a media server solution having sufficient capacity for supporting the site's workload in compliance with defined performability parameters that specify a desired limit on degradation of quality of service provided by said media server solution during periods of degraded service.

45. The system of claim 44 wherein said periods of degraded service comprise periods in which said media server configuration is unable to serve at least one stream so as to avoid interruptions in the presentation of such stream.

46. The system of claim 44 wherein said defined performability parameters comprise at least one selected from the group consisting of:

a regular-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods of degraded service under regular system operation of said media server solution, and

a node-failure-mode overload constraint that specifies a desired limit on the amount of degradation in service that is encountered during periods in which one or more nodes of a clustered media server solution have failed.